

Commodore **HORIZONS**

The independent Commodore magazine

73p December 1983/January 1984

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MORE THAN JUST A GAME...

Commodore HORIZONS

THE MONTHLY MAGAZINE FOR THE COMMODORE COMMUNITY

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Subscriptions

£4.00/£6 for 12 issues, overseas
surfers including S/S and Canada
£14.00 for 12 issues. US and Canada sur-
fers US\$23.95 for 12 issues

Submitting articles

Commodore Horizons is soliciting readers' contributions — either articles or program listings. Articles should be typed double spaced with a wide margin. Program listings wherever possible, be printed out on plain white paper accompanied by a cassette. We cannot guarantee to print every article or program submitted, so please keep a copy. If you want to have your program returned you must include a stamped, addressed envelope.



Commodore Horizons is published monthly by
Random House, New Print Ltd, Toppington
City City Ltd, 77-79 Strand Road, London
WC2E 8LD. Printed by Random House Ltd, Fleet
Way, Wokingham, Kent. Distributed by GPO
Distribution, 16-18 Treaty Lane, London
SW6 2NF (telephone 01 274 2841) when Sunday
01633 5581 4344. Registered at the Post Office
as a newspaper. © Random House 1983

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Commodore gives you the chance to win one of its disk drives

Market view

Our look at Commodore's position in the market place

EDITORIAL

WELL, ONE OF THE FIRST rules of the magazine for all users of Commodore's machines — wherever your machine, and whether you're a game player or a software user, you'll find something of interest inside. We'll be back on the 10th of January with a February issue — by which time you'll have had a chance to let us know what you think of the magazine. From then on Commodore Horizons will be published on the second Thursday of each month, so keep it handy. And we've got one paraclete rule, at hand — read us.

Commodore is a survivor. As a company it is one of the few which has retained the shell of the price cutting war sweeping out the dealers from the American computer industry. Commodore is sometimes blamed for the price cutting war. The company's policy is to cut its computer prices substantially in line with falling manufacturing costs — the greater the volume the cheaper the computer becomes, especially as a Commodore subsidiary, MOS Technology, makes many of the chips Commodore uses. It is good news for all of us that Commodore has now started to adapt its price cutting policy to its computers in its software — much of the Commodore add-in equipment has been greatly improved for the past few years.

Despite the size of the Commodore market worldwide, however, there are a very few firms producing Commodore software. This is most noticeable when compared to the hundreds of small, enterprise software companies producing original material for the Sinclair Spectrum computers. We think it is time that these software companies started producing software for the Commodore range of machines. Why not join in a campaign to persuade some of the Spectrum software houses to start writing software for the Commodore Vic 20 and 64?

We will need to persuade them that a market exists in their name, which means that they have to hear from you. Write to the Commodore Horizons software Campaign with your plea and once a month we will send the full list of names and addresses to over 100 software companies which, as far as we know, do not produce software for Commodore computers. Let's see these letters rolling in. And tell us what sort of software you would like to see.

LETTERS PAGE

Calling all pool players

I WOULD like some Vic 20 advert for games published because not many magazines have advertorial games in them. Would it also be possible for customers to send in a voucher or pool program for the Vic?

Michael Cahill
Widdowdale
Wales

WELL, SHOULD IT? Keep reading the magazine and you'll find out if anybody has asked. As for advertisers, we'll definitely be doing some reviews and programming articles soon.

Unusual Vic features

SO MUCH attention has been placed elsewhere on the facts of the Spectrum that some very unusual features of the Vic have been neglected.

Here a Vic 20 into a colour television and run this for:

FOR 1-8-TO-8000 PRINT
CHRISPEERIN NENT
While that is happening... select colour page 180. Sometimes random ghost letters appear on the top right hand corner, where the time is usually 0.

Another point is that the dis-connections for the

Supercomputer cartridge is delicious. An extra command, Chapter 4, will give almost all the RAM to the user. But will crash the computer if graphics 1, 2 or 3 have been previously selected.

Other things not mentioned are the fact that function keys can be programmed as a program and that chords can be played as a PROMPT

customers
Stephen Clapham
London NW9

Confusion reversed

I BELIEVE some users may be confused by the colour sign for control (I don't). This is shown as Personal Computing on the Vic 20 as the inverted oblique stroke (see page 180) — opposite symbol.

However, on our Vic 20 personal control 3 prints up a reversed I sign symbol. This caused a lot of confusion where we were first learning to use our Vic as some programs use our symbol and some the other.

I hope this will be of some help to other VIC-able users.
James Turner
London E16

Right royal request

I AM interested in submitting a coding program to your magazine to help users with their banking accounts. It runs on a Vic 20 with 4.3K RAM. Before submitting the

program I wish to know how much you pay for programs and if you pay an insight price on a basis of royalties on the amount of magazines sold.
A G Harris
Chigwell
Essex

I'M AFRAID you're not going to get back by contributing programs to Commodore. Most people think instead of the pleasure and privilege of appearing in print. For say £5.00 for the magazine published as Software File, and up to £10 for our New Game (and no, don't start thinking about royalties — our editor Steve couldn't cope with the strain).

Simulation located

A BILLBOARD version of simulated PRINT-AT uses the following Vic memory locations:

26912H Pointer to screen line
214H Position of cursor on screen line
214-26H where cursor lives.

The above is an extract from the Vic 20 programmers' reference guide.

My memory is as follows:
A = 2640 = 9921 B = 1547
CA/2556 C = A - 87156
POKE 26014 POKE 240
BPOKE 2115 POKE 214,7
J D that

Michael Blackburn
Leeds

Cassette aggravation

MY VIC was purchased as a replacement for a 2500. When I originally purchased the 2500 I also bought a good quality cassette (complete) to go with it, and that is the problem.

Recently I wrote to Commodore and duly received a letter informing me that if I took my cassette recorder to my local dealer I could have it modified. The manager of my local dealer informed me that it did not carry out the type of work and was only an agent.

They could forward my cassette recorder to Commodore but there would be a handling charge of about £30 plus the cost of the work to be carried out. At this

point I had say that other customers of his had expressed similar complaints. All that was needed in most cases, he said, was a cable with the appropriate plugs and fittings to enable the cassette recorder to be used with the VIC 20.

Here's other Commodore users experience this problem? If so, could they supply information where the parts can be purchased and how the work is carried out?
Neville Webb
Aberdeen
Cumbria

Interpreting the words

I HAVE been surprised to learn computers do not seem a just now (even to the point of it becoming a major commitment) but to date have only "played" with those having an desire to design.

Now has come the time to buy one and after much deliberation I have decided on the Commodore 64, mainly for two reasons:

1. The built in music synthesiser seems to be more advanced than in other models of same price.

2. The 44K RAM is worth as much more as upgrade a Vic 20 to the same capacity, and besides that I hate the 22 x 33 screen display.

But in the Commodore 64 data sheet it states that "existing Vic and 40 column PDP-like programs can be easily converted". It would like to know just what "easily" means. I saw Commodore do this and they said it's practically a complete rewrite (this is not my idea of being easy).

One would think that Commodore would have designed a convenient converter to plug into the rear port of the 64 which would enable direct input of Vic software.
A R A Wise
Staines
Essex

This is the chance to air
your views — send
your tips, complaints
and compliments to
Letters Page
Commodore Horizons
12-13 Little Newport
Street London
WC2R 3LD



I mean you didn't really expect your name was on this in a print by Thomas and his brother David (VIC 20 and you.)

INTERGALACTIC LLAMAS BATTLE AT THE EDGE OF TIME

Intergalactic Llamas Battle at the Edge of Time is a unique space strategy game that will challenge your mind and your ability to think outside the box. The game is set in a futuristic universe where llamas are the dominant species. You will control a fleet of llamas and engage in epic battles with other llamas. The game is available on PC, Mac, and Linux. Price: \$29.99.



LARGE COVER

Large Cover is a unique space strategy game that will challenge your mind and your ability to think outside the box. The game is set in a futuristic universe where llamas are the dominant species. You will control a fleet of llamas and engage in epic battles with other llamas. The game is available on PC, Mac, and Linux. Price: \$29.99.

Available on PC, Mac, and Linux. Price: \$29.99.

MATRIX

Matrix is a unique space strategy game that will challenge your mind and your ability to think outside the box. The game is set in a futuristic universe where llamas are the dominant species. You will control a fleet of llamas and engage in epic battles with other llamas. The game is available on PC, Mac, and Linux. Price: \$29.99.

MOVIE COVER

Movie Cover is a unique space strategy game that will challenge your mind and your ability to think outside the box. The game is set in a futuristic universe where llamas are the dominant species. You will control a fleet of llamas and engage in epic battles with other llamas. The game is available on PC, Mac, and Linux. Price: \$29.99.



ATTACK IN THE MUTANT CAMELS

Attack in the Mutant Camels is a unique space strategy game that will challenge your mind and your ability to think outside the box. The game is set in a futuristic universe where llamas are the dominant species. You will control a fleet of llamas and engage in epic battles with other llamas. The game is available on PC, Mac, and Linux. Price: \$29.99.

Available on PC, Mac, and Linux. Price: \$29.99.

ARMADILLO

Armadillo is a unique space strategy game that will challenge your mind and your ability to think outside the box. The game is set in a futuristic universe where llamas are the dominant species. You will control a fleet of llamas and engage in epic battles with other llamas. The game is available on PC, Mac, and Linux. Price: \$29.99.



Homecraft

AMERICAN GAME SOFTWARE

48 MOUNT PLEASANT,
TACILEY, WASTE, RG2 8BN
TELEPHONE: TACILEY 107336 4175

REQUIREMENTS

For the best experience, you need a minimum of 16MB RAM, a 386 or higher processor, and a VGA card. The game is available on PC, Mac, and Linux. Price: \$29.99.



All values add
VAT postage and printing

A Portable feast

THE CEM 64 portable computer will be on sale in Britain before Christmas, according to Commodore UK's marketing manager, John Bower.

First shown at the Chicago CES show in June, the CEM's launch in the UK is a "fait accompli".

The CEM has 64K RAM and is based on the 6502 compatible 6540 chip. It has a built-in 8 inch colour monitor and single floppy-disk drive with 700K storage capacity. The detachable keyboard is of the full-size full-stroke type.

The unit has cartridge, Commodore, and cassette ports and is compatible with Commodore 64 software and peripherals, including the Workbench unit.

A 240 cartridge/disk is planned for the CEM 64 to make it CP/M compatible.

Language options include Pascal, Logo, Cascal, Assembler and Pile.

No UK price has yet been fixed but an US list of \$899 would suggest a price of around the £300 mark. A review of the machine is scheduled for our next issue.



AT THE END of November Century 2 Software should have completed conversion of all 20 *Hyperion Adventures* from original Fontana for the Commodore 64. The 18 titles are all positional role playing adventures written by about 150 authors. The Golden Rule, Arrow of Death 2, Arrow of Death 3, The Time Machine, Circus, Feasibility Experiment, Escape From Planet 7, The Wizard of Azyx, Perseus and Antioch and The Little Jachans. Each of the titles is priced at £9.95, available on cassette.

Commodore gets that tip-top feeling

COMMODORE now claims to be the top-selling UK home computer company.

A spokesman for Commodore said that reports from retailers indicate that "total sales of the Commodore 64 and Vic 20 machines have overtaken sales of the Sinclair ZX Spectrum and C&A1 models". Commodore's closest rivals.

"We have been British-based leader in meeting sales for some time, but now we are ahead in units, bringing us even closer with the situation in the US," the spokesman added.

In the US it is now estimated that Commodore has captured

43% of the \$1.3 billion market for under \$1,000 personal computers. In recent rival Texas Instruments, is estimated to have a 20% share of the US market, with Tandy (marketing the Amstrad) market only 10%.

In recent months, during a fierce US price war, Commodore has broken ahead of its American rivals, none of whom — Ayrt, Texas and Marel — have reported heavy financial losses.

Indeed, so damaging has the price cutting been to other that Marel has indicated a wish to withdraw from the home

computer market — and Atari announced in October launch of over 10000 for the third successive quarter.

Commodore, surprisingly under these circumstances, has announced record annual profits up to \$1m on sales destined to over 500,000 Commodore machines. Jack Tramiel attributed the growth largely to "intentionally driving demand for the 64".

In the UK Commodore has stepped up production of the 64 to try to ensure sufficient stocks for Christmas, but it already seems likely that demand may swamp supply.

Precision offers database potential

Rose blossoms at Phoenix

SUPERBASE 64 is a new programmable database and information retrieval package for the Commodore 64 from Precision Software.

At its most straightforward Superbase 64 offers the user a menu-driven system within which individual record structures can be built up. The database can hold up to 15

files, each containing an unlimited number of records. Each record can contain up to 10,000 characters spread across up to 127 fields spread across four screens.

When these constraints you can build up whatever record or file structure you wish.

However with Superbase 64 you can go one step further. With the micro-programmable interface part of the package you can adapt the database software to your own precise requirements using the Commodore 64 basic in conjunction with 70 additional Superbase Basic commands. *Jevels, Find and so on.*

Says Precision's Peter Thomas: "You can build almost any specialist application you want. For example, if you want an accounting system you can build one with very little work."

In the next six months the company plans to distribute a range of add-on software packs for Superbase 64 developed using the Basic extension — providing contact with speech control and networking.

Superbase 64 is available on disk, complete with a 200-page manual, priced at £29.95.

PHOENIX Software is a new games company set up by Gerry Rose, one of the founders of the predominantly "big 20 software house" Britain.

The new company has an extensive idea — a well sold microcomputer games containing both an arcade-style game and an adventure type program.

Before you can begin to tackle the adventure you must master the arcade game, giving you access to the loading code for the adventure. Also, clues for solving the adventure are revealed as the arcade game play progresses.

To begin with Phoenix has two titles for the Vic 20 and one for the Commodore 64.

In *Four Gates to Freedom* for the Vic you must first destroy the four gates which bar your way, before entering the catacombs of the planet Korax to rescue 25 prisoners trapped in a perpetual nightmare.

In *The Sorcerer's Apprentice* for the Commodore 64 you must temporarily stop the forces from locking away. Then you venture into the sorcerer's castle to search of the spell or put paid to the incoming force and for all.

All titles are priced at £9.95.

And now . . . Revenge of the Mutant Camels

JEFF MINTER of *Clamshell* is working on a new game for the Commodore 64 — *Revenge of the Mutant Camels*.

In it you take the role of a mutant camel, fighting back against the camel's defeat in Jeff's previous arcade action *Attack of the Mutant Camels*. You have three mutant camels, each with its own personality as far as possible through more than 40 attack moves.

Each camel has a different theme — in *Rockin' and Roll* you are attacked by huge beaters and mutant cigarettes. In other words you meet mutant mutant camels, a figure called *Supreme Being* can lead, and all *Mutant Mover*.

Your camels can fire in eight



Jeff Minter: "The camel jump is a really delicious way

directions and use jump. Sam Jeff: "The camel jump is a really delicious way and when they sit down they look very silly. It's great."

The new 64 game should be

finished by mid-December — price \$7.50. Then Jeff will start work on his next No. 20 game: the follow-up to Megapalooza *Clamshell* Battle at the Edge of Time.

Cheaper printing

IF YOU are looking for an inexpensive printer against that *Seikosha* Commodore 64, November may have the answer.

For \$22.95 the company is offering an interface and power supply that will enable the low-cost *Seikosha* thermal printer to be used with the Vic 20 or Commodore 64.

Software supplied with the interface controls the Commodore channels all the data printed by the *Seikosha* 24 Printer and provides a number of control commands.

Salvus will also supply the package complete with a 24 Printer for \$1.95.

Alice makes you wonder

ALICE at *Wunderland* is a new disk-based graphics adventure for the Commodore 64 that looks like setting the standard for home releases.

Following the story of the original Lewis Carroll book, *Alice* the adventure takes the form of a sequence of eight distinct, arcade-style games featuring an animated Alice figure.

What marks the game out are the cartoonish quality graphics and the continuous soundtrack of music.

Alice has been developed by a US software house and will be available in this country through *Androgam*. No date of arrival or price have yet been set.

Corby factory in full swing

PRODUCTION of the Vic 20 and Commodore 64 machines is now in full swing at Commodore's new plant in Corby, Northants.

Over 1,000 computers a day are coming off the production line, only eight months after

Commodore announced its choice of Corby for the £30 million plant.

The new factory is the centre for European manufacturing of home and personal computers — out of five such sites worldwide — and machines

from Corby are exported to the rest of Europe, Scandinavia and Africa.

At present the Corby works employs 160 people but Commodore is currently negotiating a loan from the European Coal and Steel Community to allow expansion in 1984. This would more than double the numbers employed and push the number of computers manufactured per year at the site over the 1 million mark.



COMMODORE is certainly not in error, given its British appointment — especially the *Clamshell*. The English *Bombardier* Association has asked a £25,000 *low-cost* sponsorship from the company over the next two years. In the past Commodore has provided and operated a unique program for the association which allowed information to appear instantly on the screen during TV transmission of games.

Stack promises all the fun of the fair

THE STACK Light Rifle is a new idea for the Vic 20 and Commodore 64.

The rifle, which operated by the computer running specially developed software, can be used to "shoot" targets on screen.

The device detects a hit or a miss by comparing the time the trigger is pulled with the time the trigger is released. A score is shown: the point you are aiming at.

When the rifle reaches the point on the screen at which the rifle is aimed, light from the tv screen is light sensitive

will reach the rifle barrel.

The rifle will only work with software written specially for it. So far Stack developed an *Archie*, *King and King*, *Crow Shoot*, *High Moon*, *Clamshell*, *Twilight*, *Escape from Atlantis* and *Big Game Safari*.

The Stack Light Rifle will be available from mid-November and is supplied complete with three game rifles, at a price of £29.95.

If you think you've something newsworthy, call 01-437 4343 and let us know.

Commodore brings out a mixed batch

COMMODORE Business Machines are most usually known for their hardware than their software, but this month we're here to tell of a determined campaign on their behalf to break into the business market.

We're pleased not some of their games for both the *Vic 20* and *Commodore 64*, and to get the ball rolling we'll start with the 64 side of things, and the historically named *Magnum*.

This *Commodore 64* game is supplied on cassette, and although you have the option of using either a joystick or the keyboard to control the game's events, those of you with less than 20 fingers might do well to use a joystick.

Like so many other games this one falls into the category of versions on a theme, as it is nothing more than a poor impression of the arcade favourite *Centipede*.

Garden defender

For those familiar with the game, *Centipede* (and *Magnum*) can be in the role of defender of the garden, a sort of *Buck Rogers* meets *David Balfour* vs his or fight all kinds of maggots, spiders and snails. The maggots are mostly meant to scare you, and walk their way about the screen scattering off any flowers that happen to get in their way.

You, being a better creature, cannot remain in the same way, as any collision on your part with a flower results in the loss of a life. Spiders enjoy similar luxury to the maggots, and they make occasional forays into the garden in the hope of bumping you off.

The snails aren't particularly dangerous, and provide you with a 1,000 point bonus should you hit one before it destroys too many flowers.

In *Centipede* is a somewhat inspiring version of an arcade favourite, and on the 64 comes out looking more like a shoddy version of the highly popular *Orbustamer*, from that company obsessed with *Llamas*.

Your little creature is confined to the bottom few rows of the screen, and when some of the maggots inevitably get past you, they race about at lightning speed in a frantic effort to collide with you and thus lose another of your lives.

Response from the joystick is quite reasonable, but overall the sound and use of graphics are merely fluffing at the power of the 64, and are by no means using anything other than a fraction of the capabilities provided.

A poor game considering what could have been done. Stick to the arcade, if you

SOFTWARE REVIEW

Pete Darnall takes a long hard look at the software Commodore itself puts out



Here John is paid over for the life.

like demolishing maggots spiders and snails a guaranteed delight.

Japan's Lander, a familiar-sounding title from the days of computer games (and out to be another flop in its current guise, after appearing under names such as *Lunar Lander* in the early *Pet* days, a first appeared on the *Vic 20*.

Little excitement

The version produced for the 64 has hardly changed at all from the *Vic* version, and is as boring now as it was then. Almost identical in making sense.

The object of the game is to land a spacecraft on the surface of the planet *Japan*, a surface which has strange platforms on it, with bonus points without on them. Carl Sagan, as your heart out. Using either joystick or keyboard, you have to manoeuvre your spacecraft left or right, and your only other control is over the thrust of the rockets.

A challenge based on the quantity is required as usual: experiments with the game left me feeling the NASA version and taking place keeps me into more space again. *Japan's* score is for too big to miss altogether, but when you only control a joystick it's all too easy.

This game is boring. The initial screen shows three platforms on the surface of the planet, which give you either 2, 3 or 10 bonus points for achieving a successful landing. When you see the top of one of these platforms the screen image expands, and a single platform fills up the entire playing area.

Unless you're an extremely dolt hand at controlling the joystick, and manage to land at precisely the right speed, exactly in the middle of the platform, it's back to the launch pad as another ship takes the shot.

Unless you have got the hang of it all, the game comes to this: whatever number correct it might ever have held, as there are no additional hazards, no speeding up of the action, and no changes. You just keep on landing on the platform, then going back for another go again.

The one virtue of this game is that it is supplied on a cartridge, so you won't waste several minutes waiting for it to load.

Send in the clowns

Clowns. At the stage, after ploughing through the first two games, this simply summed up my opinion of Commodore for looking to put them onto the market at all.

That *Clowns* did at least manage to deliver some of my funk is their ability to write computer games even if, like so many other games, the idea is about as original as most of the music in the current pop 20.

Clowns first appeared for the *Commodore 64* back in 1979, and since made this new version for the *Commodore 64* (supplied in cartridge format again) has added very little to the original game.

You control a little clown on a one-way who has to balance a under another clown who has, however, only leached himself into space from one of the floor platforms on the edge of the screen.

If you manage to position this clown correctly, the impact of the clown landing on it sends another clown soaring towards the top of the screen (an obviousness known at the top of the screen) where, *boom* like, he hits to rest one of a succession of balloons passing across the top.

There are three rows of balloons, in different colours, just to show that the *Commodore 64* has got colour, and closing whole row of balloons rewards you with various bonuses. Each balloon is also worth a few points, depending on its colour.

One thing that is noticeable about the packaging (and by no means a winning saying) that this game requires the *Commodore* games paddles in order to play.

a properly designed controls, so unless you're one of the very few people who have a set of paddles, this will not be one of your most successful games.

Once you do get started it is actually quite addictive, as your little demon hurt about the screen, jumping up and down on the on-screen and beating all the balloons that they can find. The score gets faster as you progress, although you can get a handy high score by hardly moving at all, since the rhythm has broken.

To conclude, quite fun, but ultimately one has to say that the 64 deserves better than this. And they should have said something about those paddles!

Join the rat race

Rat in the Race — a game about communicating parrots? No, no, this one puts you in the game of a little rat, being chased by a horde of red rats, grabbing up cheese as you move around the screen, and attempting not to being into city of the deadly rat the left about.

The screen display is quite imaginative. The left-hand side of the screen shows only a part of the entire maze in which you find yourself. The right-hand side contains all the details of the maze, however, from left and on-on, together with a miniature map of the whole maze, showing where all the cheese are to be found.

Since your little blue rat requires a lot of cheese before he can progress to the next level, this comes in quite handy. Of course, one could say it is there to make the programmer's life easier when controlling sprays, but that would be understandable.

Once again the comes in cartridge form, and this is much to be preferred to tapes or disks. It's much more reliable, and takes just seconds to install.

Using a joystick as your control, the screen is fast and furious, as the chasing red rats infuse on the first level show an uncanny ability to find and chase after you. They can be put off the scent for a while by spraying a smoke screen behind you, but you usually get a limited amount of smoke, so be careful.

One of the bumps of cheese is a special one, which doubles the score you get for eating any other bit of cheese. At least, it does until you lose a life.

Getting through nine level leads you to victory, two with four rats after you. Getting

through this and brings you to the main speed race, where you have the same time allowance (but very generous) to eat all the cheese before five supervillains red rats come after you. When they start, you have no choice. They move at least twice as fast as you can, so you might as well drain the sinking ship and start another game immediately.

It is a good game, and certainly the best of Commodore's 64 bunch.

Rat in the Race could be the result of playing too many games in this day, but at least this is a fairly entertaining game for the Commodore 64.

Back to reality for the time, and after waiting nearly seven minutes for the game to load, you really appreciate computers.

The time spent waiting can be filled up by reading the astonishingly understanding information sheet, supplied with the tape. This describes the screen in words of few syllables, and it gives you are told that the screen will fill with a balanced collection of them. After you've managed to control your hysterical laughter, which isn't too difficult, the game proper commences.

Once again the comment has to be made that, for a graphical machine, the program does little to show you any of the features available, as everything is done in so-called chunky graphics.

Memory test

A fact will appear on the screen, and after five seconds disappear again. From memory you then have to correct the screen fact using a variety of commands.

Separate keys control the four eyes, nose and then, and using a combination of the four you have to colour the marker face. A good memory test with the answering team frequently scores less than half marks when producing the face. However, by the time you've drawn up half a dozen different garboles on the screen, the answer begins to sink, and the finger lock elsewhere for something different to do.

A good game for the times amongst us, and, as a memory test, it does have a role to play in the educational world. But that they would have to re-write the curriculum which really are quite dreadful and perhaps do something about the graphics. They are miserable, but do not could be better. Half marks for trying.

With Sea Wolf it is back to cartridge again, and just as well, otherwise a few

more minutes would have been wasted.

I suspect of software companies at least, and with this program being the result of a joint venture between Commodore and the electronic games of Italy, responsible for many of our best arcade and pinball machines, there is really no excuse.

Quite simply this is appalling, and why anyone wasted money on getting it onto the market is beyond me. You are in charge of a state submarine glued to the bottom of the sea and screen, handling a limited supply of torpedoes to shoot up at the ships passing above. Different sets of ships score different points, and machines to say the machines, fastest ships get you the greatest points.

Paddles needed

There is a time on the game although this can be changed if so required. Once again you have to use a set of paddles, as there are no options for keyboard or joystick control of either of the submarines in this one-player game.

I tried hard to find a substituting for the game, I really did, but there just isn't one. All you have to do is sit at the bottom of the sea and launch torpedoes up at the near-sinking parade of enemy ships above.

There is no radar control, no statement of your submarine's depth about attacks, and better graphics were achieved on the earlier Commodore Pet version of the same game (see review of course).

One could go on, but why bother? If this is Commodore's attempt to attack the software market, they're in for a long wait.

Commodore have also a series of arcade games for the Vix 15, some old, some new, but the ever-rising impression of the games is that they are much better than Commodore's own games for the Commodore 64. Why, why, why?

Comme l'italien, based on the arcade game of the same name. First appeared as a Pet game in 1983, written by one Bob. Hopton. Whether he is the author of this Vix version I don't know, but this is a faithful reproduction of that Pet version.

Supplied in cartridge, you can use either the keyboard or a joystick to control the screen, and for once the keyboard is just as easy to use. You are a little spaceship at the bottom of the screen who can move left and right, and who has the job of guarding a prison deep in the depths of outer space.

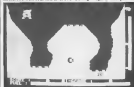


Figure 1: Rat in the Race — a different view to see the controls



Figure 2: Rat in the Race — the screen in Pet and Pet version

4) In this prison are three offending slaves, and they are surrounded on all sides by rows and rows of bricks. But, there is a 'cellblock' a corner' or border of other slaves are lined up in formation at the edges of the screen, most on ropes in between your fire and meeting the bricks at the jail, once in a time.

As they move back and forth they are also firing at you, and your three space invaders type defences now begin to crumble under the onslaught.

Occasionally one of these slaves will go berserk, and while the row it was still will run about like an alien possessed, sending bricks at a rapid rate. A mysterious modern ship also appears from time to time at the top of the screen. High beams can be activated by tapping this one into cosmic delays.

Proceeding goes along at a nice bit, and by the time you arrive at level three yet more things begin to happen. Between levels the jail may or may not be rebuilt, depending on how many lives you've got left, and how many prisoners are still in the jail.

On the third level, an enemy appears already above you, and he can only be killed by shooting him at the edge of his body. By the fifth level, a terrible chain of slaves is dancing above your ship, and when you destroy all five of them, the enemy lies prostrate and starts bobbing about again.

This is a superb game with so much happening supplied on cartridge, it



Omega Race—a superb game giving lots of action for your money.

deserves a place in every game player's collection.

Omega Race is another fun screen, destroy everything that moves and everything that doesn't space giant for the Via 30 Cartridge-form again, and you'll need a joystick or a set of game paddles to play this one.

A not sporting feature is that you can change the background and foreground colours of the screen. This could be very useful on some sets, as too many Via games seem to appear in the strongest combinations of colours that generally render combining on the screen as being totally illegible.

If you put it wrong with Omega Race you're only yourself to blame. Once you start playing you really do have to destroy everything in the course of the space is a rotating star block which you can't penetrate, and unfortunately that is taking a load of shots, just waiting to get you.

Correcting your speaking is, to say the

least, difficult. Once you've started moving in a given direction, stopping and changing direction is virtually impossible, and you just have to sit and wait while your ship blunders roundly around the screen, scattering off walls and the block until it finally comes to a rest. That's a start for you.

While you blunder about, the alien comes after you, and there are a number of different types of enemies, each with their own little trick up their little alien sleeves.

This game is fun, and even if you do start blithely bumping into things, it should at least provide a few laughs along the way.

By the time you've worked out how to control the ship properly (30 games later), the game does begin to make more sense, and you can get on with the job of taking the alien. Tapping different alien patterns different codes, and everything, at least, you get faster and faster as it goes along from level to level. Another great arcade game for the Via. ■



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All the pleasures of printing — and some of the pain

Pete Gorman assesses the range of printers on offer for Commodore users, from daisywheels to dot matrix models — and offers some advice to wannabes

ANY COMPUTER that takes itself or all seriously can be connected to a wide variety of printers, covering such diverse interfaces as IEEE, RS232 and Centronics.

However, neither Commodore computers, before the company launched into the home market with the 260 and Commodore 64, were fitted with a special version of an IEEE interface. While a smart purchase would give you the opportunity of linking up to many standard IEEE printers, it would also leave you £25 worse off. A little bit more expenditure could expand your world to include a variable band of RS232 and Centronics printers, and we'll be taking a look at just some of the printers currently available later on in this article.

Size, size, ...

Of course, you could always use Commodore's own printer, ranging from a (relatively) inexpensive dot matrix printer to a (not so) relatively expensive daisywheel

printer. The speed of the latter devices may have left many people thinking that they could type faster themselves.

Owners of Commodore 64s and Vics 26s were in a bit of a loose position, as that the interface provided on those two computers was compatible with nothing other than Commodore's own peripherals. The dot matrix printer used by Commodore itself is not only incredibly expensive, but also very slow in operation, and very, very noisy.

Enterprising manufacturers, ever quick to make a fast buck or two, have produced a whole collection of interfaces which allow your humble home computer to connect up to all of the interfaces mentioned earlier. But beware: matrix printers and every connector will work with every piece of software. Word processors, one of the primary reasons for acquiring a printer in the first place, are very fussy about which interface you use, so start on seeing a working demonstration before buying.

The type of printer that you get will be largely determined by the work to which it will be put. If it's set in to be primarily private, producing letters and memos, reports, the chances are that you'll be able to get away with buying nothing more than an old-fashioned dot matrix printer. The quality of the output won't be too great, but it will certainly be legible, and a good dot matrix should be able to print along at speeds well in excess of 100 characters a second.

... quick, quick ...

If the printed material is to be seen by anyone other than yourself, for instance, or a company using the printer as part of a word processing system, you'll probably have to spend rather more money and be prepared to put up with a slow, but high quality, daisywheel printer.

Some of the devices now available allow you to mix these two great types to a limited extent, in that they will normally act as a dot matrix printer, but can switch to



Some of the range of Commodore printers — which offers one of the cheapest daisywheel printers along with the newest models

technology known as double-sideding facilities, producing images that produce a reasonable impression of the type of output most commonly associated with a desktop printer. At over, you pay your money and take your choice.

For printers, other than Commodore's own, will allow you to reproduce the graphics character sets found on the actual computer. Although most of them will allow you to define characters and produce, for example, dot by dot copies of the screen. However, this requires some way to be written by you, the user, so we'll stick to manufacturer printers, starting with the D600 IM, which can operate in either RS110 or Centronics modes.

Incidentally, all of the printers listed here can be used with any of the Commodore range of computers. You'll just have to get the interface appropriate to your own machine.

The D600 IM, which is distributed by Triumph Adair (27 Goswell Road, London EC1), is a 120 character per second (abbreviated from now on to CPS) printer, with the ability to print bi-directionally. The number of characters printed per line is software-selectable, and can range from 104 to 132. Although this latter model is the type that requires an extremely powerful magnifying glass.

• • •

All sorts of character sets are available with this printer, but at a price of \$675, you may care to take a look at the slower, but cheaper D600 8040. Again from Triumph Adair, this is driven at 80 CPS and 1240. Again from having only a 100 column line at maximum, the other real difference between the machines and it's big brother, the D600 IM, is the print speed. And, of course, the price.

Cheaper still is the Fast 4500 from Farn Adair (Maidstone Road, Rochester, Kent ME1 3QH). This is a 120 CPS dot matrix printer, with a column width of up to 80 characters, which is available down to 12 columns, should you so desire it. There's quite a wide range of character sets available, and also a number of different print modes, including condensed and compressed. This can be linked up to either Centronics or RS232 interfaces.

The next lot of printers are by Epson (Dartford House, 518 High Road, Woking, Middlesex GU14 6AH). Epson has long been known for producing good, cheap, dot matrix printers, and its latest range of models have done nothing to harm that hard-earned reputation. These are being perhaps to the historic combination of letters they go under. Thus we get the FX 80-PT, which is closely related to the FX40, which is turn closer to the MX series of printers, and so on. Why can't they just have names!

Anyway, coming next, the aforementioned FX 80-PT is a 100 CPS printer with a variety of typefaces and sizes, supplied with a Cyma serial interface (although this can be converted into either IEEE or RS232 if required), and capable of taking either frame feed or tractor feed.

At just £119, this is surely considering, at it is slightly more expensive big brother the FX40. This costs £208, but has the ability to print at almost twice the speed (160 CPS), and produces some better quality output, as it's possible to double strike everything. Out of all the printers looked at here, the FX40 has got to be a personal favourite. I've owned one for a number of months and have yet to find a problem with it. The range of commands is, at times, superior to the range of commands on the computer that's driving it. A line printer, with an excellent manual.

Possibly the fastest dot matrix printer that is readily available for any Commodore computer is the D805 240, again from Triumph Adair. This runs along at the amazing speed of 240 CPS, and comes complete with either an RS232 or a Centronics interface.

However, if the computer that you happen to own is a Tri 2000 a Commodore 64, there seems little point in paying an initial £200 for a computer, and then another £140 for the printer to go with it. Presumably when the printer costs even less as much as the computer, I feel that the time has come to go elsewhere. If you're extremely rich, obviously the D805 240 has to be recommended. If you're like the majority of us, it's either handwriting — or by the Epson FX-100. This is the latest and greatest dot matrix printer to come out of the Epson stable, if the specification does hold true.

At £589 the FX-100 has everything that the FX40 has, including the 160 CPS print speed, optional interfaces of every kind, and superb graphical facilities, but it also has a much wider carriage. A dot little number, it should tell by the thousand.

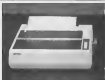
Many companies seem to make a living out of superimposing Epson printers, and indeed the early Commodore printers for the P11 range of computers were cut-down versions of Epson models. This is not a bad thing in itself as the recent form of factory, and all that, but should check whether the printer you're thinking of buying isn't already available from Epson, at a much cheaper price.

Final type

But we agree. When examining specifications sheets for printers, obviously they will all try and show you with a wonderful range of capabilities. Most printers, however, do have a falling somewhere along the line, and this is either not mentioned, printed in minuscule type, or disguised at some way.

The most common falling is at speed of printing and a phrase often used by manufacturers to hide a slow print speed is the term lines per minute, instead of characters per second. By using LPM instead of CPS they can tell you down a large number, and those that most people won't think it to be a slow printer. While 15 LPM sounds quite good, remember that a line is typically 80 characters across, and that 80 times 15 equals 1,200 characters per minute (73 CPS). This is not quite as fast as a first considered.

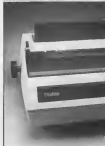
All this is by way of introducing the



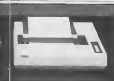
One of the earliest from Epson, the FX40.



Commodore's own FX40, which is a 120 CPS printer.



Commodore's own FX40, which is a 120 CPS printer.



Magnum CX 40, which looks like an early Commodore printer, prints at the aforementioned 33 LPM (although it is fast if it can print at 133-CPS in certain special cases, like printing line art like that of the same characters, and such a Commodore-compatible IEEE interface will let you have some 2845

As a point graphics printer it has many advantages over other conventional dot matrix printers because it has a choice of seven different colors to print in, and it also accommodates print lagging. However, program listings at high resolution printed in seven different colors tend to look a little odd. Unless your need is a highly graphical one in which case contact the Computer Services, West Coast Industrial Estate, Manchester Old Road, Oldham, Middleton, Great Manchester M24 4PL, we'll go back to ordinary printers, and look at a little number from Manchester Telex. Manchester was at one time supplying Commodore with printers, although I believe that agreement was discontinued a while ago. Still, it is continuing to produce the M700, which is a 2796 Commodore-compatible 40 CPS dot matrix printer. Manchester seems to have gone all out to be compatible with anything else currently available, as the M700 can handle all the Epson codes, as well as having a number of its own. Any one of a million different interfaces (well, quite a few) can be hooked up to this one. It makes very quiet, a boom if you happen to be next to the thing all the time it's working.

Dotplotters

But enough of dot matrix printers. One of the most of the above collection should run most people. As many people using Commodore computers for pleasure will probably also use them for business so we'll have our attention to some of the cheapest printers currently available.

All of these will work with a Commodore 64 or Vic 20, provided that a suitable interface is connected by the laptop — which comes from Oxford Computer Services, Hoxington Road, Woodstock Oxford OX2 0LR. But in most of these you can override a thousand pounds they will probably be at most attention to the business you. Still, if you own one of the lower models and fancy a little bit of better quality printing, read on.

One thing that just shows all dot-matrix printers have in common is that they are slow. That their primary use would not be in producing program listings, but in printing out letters, reports, forms, etc. You don't buy a dot-matrix printer if you need software programs.

Triumph Adler encountered earlier when talking about dot matrix printers, produces possibly the cheapest dot-matrix, the TFD 170-5, which costs £115. This is not the fastest of printers, at just 37 CPS, but it is of a high quality, and it is also quiet. A maximum of 194 extremely small characters can be printed across a line, and with a whole range of optional interfaces, covering Centronics, Qume and RS232, it should be able to talk to just about anything.

Triumph, at 35 CPS, has much experience at 11,871, is the DWP 3005, from the same company. Millions of advanced features, including double print, bold print, underlining, printing up to 141 characters a line, and so on, make that a remarkable and fast dot-matrix printer. Not many models under 10 pound will print as fast as this one will.

Many-colored dreams

A company down in Woking is producing a whole range of dot-matrix models, including one at just £275. However, the Geca D 14 won't win any prizes as it produces its lower quality output at the price-inducing rate of 12 CPS. Still, you can print in colors red or black, and a large print buffer compensates somewhat for the slow speed by timing the computer to get on with some other work while everything is being printed out.

The D-14 comes from Geca Electronics (Ride Farm Road, Woking, Surrey GU21 1DW), it does the Dapple 620-80 at 275 and the Dapple 630-AP at £1 650. These two are fairly similar, printing at 25 CPS and 40 CPS respectively, and including various font sets, character widths, margin controls, and so on. RS232 interfaces are available on both models, but the latter scores 25 in graphical abilities, as it incorporates Geca's Hypex vector plotting — useful for all those business programs that draw out bar charts and histograms at the drop of a byte.

Many other dot-matrix printers are available, including the Olympia ESW 3000-80 from Intelligent Innovations (144 Wood Street, Stratford-on-Avon, Warwickshire CV37 4EP) at £1,150. Smith Corona is another consistently successful name and an extremely cheap (£349) 120 words a minute TP 1 model has already found a few friends. This can be obtained from Eastern Trading Company, Denham House, 51 High Street, Denham, Uxbridge, Middlesex UB8 3DA.

Finally, in a shade under £1, is the Heymeyer (at last a printer with a name), from the same Eastern Trading Company. This normally comes with a Centronics interface, although you can get a Commodore compatible 19401 interface fitted if desired. Although it has a slow print speed of just 8 to 13 CPS, it has one feature which is truly amazing in this price. It is also a typewriter, having a full retracting keyboard fitted to it. Since it only weighs 21 pounds, it also becomes portable, rather than a desktop.

I've covered a reasonable range of printers, from the surprisingly cheap to the extremely fancy expensive, with prices going from what's new to here's price. The rest is up to you.

One final word of warning about going to buy a printer. There are expensive usually costing more than the computer, so you've ended up in a little bit of extra help from the shop. Demand to see a working version of the set up that you will be using, including all the interfaces and all the software before parting with your hard-earned cash. Only that way will any last minute problems come to light. ■

Cross the minefield at your own risk

ONE OF THE more consistently useful, awarded ways of learning to program is by studying someone else's programs, and adopting any useful techniques that they might have used. We can follow that procedure by looking at a games program for the Commodore VIC-20.

The game is called Minesweeper, and the object of the game is to guide a little bird across a 9 by 9 square grid. Some of the squares on the grid have mines in them, and walking onto such a square will result in instant destruction.

Age Group	Male (%)	Female (%)
18-24	~15	~10
25-34	~15	~10
35-44	~15	~10
45-54	~15	~10
55-64	~15	~10
65-74	~15	~10
75-84	~15	~10
85+	~15	~10

You are equipped with a survey ruler that allows you to scan the immediate area around you. If there is a mine within one square of your present position, the information will be displayed at the top of the screen. However, it's up to you to determine which square the mine is in.

Climbing successfully means the goal will send you into the next level where there are even more hidden items. And so it goes on, with more items appearing all the time, until the inevitable happens and you must move along.

The program can be broken down into several main stages, and the first 30 lines are close to the screen, tell you who is behind the program, set the screen and border colours, and then go on displaying the main screen on the screen before demonstrating an array initialisation line 30. The screen

2000年12月31日

Pete Cleveland steers Via 20 owners through the minefield of reconstruction

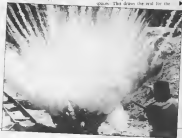
with the following results:

Line 20 contains the level register L_0 and the variable I , which determines your position on the screen relative to the start of the screen memory, which on the

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Lines 58 to 59 need some explanation as the printer used to produce the listing can reproduce the graphics symbols. Line 58 contains all PRINTING within quotes: a space, then shifted C, then a space, then shifted C, and so on, until you have 9 spaces and 9 shifted Cs. Line 59 is exactly the same as line 58.

Line 40 is PRIVATE; when given a shifted \mathbb{H}_n a space, a shifted \mathbb{H}_n a space, and so on, until you have 18 shifted \mathbb{H}_n and 18 spaces. This closes the end for the

[illegible]

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▶ point onto the screen.

Line 56 positions you on the grid and places an asterisk in the top right hand corner of the grid (this is the spot that you're aiming for).

Lines 57 through 59 are generating the positions of the mines on the grid by producing random numbers in the range 0 through 9 for the X-direction, 0 through 9 for the Y direction, and then storing those X-Y random numbers into the M(10,11) array by putting a value of 1 into the array where the co-ordinates meet. A 0 in the array means that there is no mine at that location.

Line 60 is a universal check to see if you've reached the top right hand corner of the grid. Lines 61 through 66 check for pressing of one of the four movement keys, and going to the ROMised instructions to process moving up, down, left or right.

All of these moving routines are the same in that they start by checking for the validity of a move to ensure that you don't go over the borders of the grid. They then update your position on the grid and POKE your new position onto the screen using the I variable offset from the start of screen memory at 1600. Your old position is indicated by a dot on the screen, positioned using the variable Q.

Bomb search

The next steps to update your X or Y co-ordinates on the grid, before going to the bomb checking instructions starting at line 1000. This checks the X and Y co-ordinates of all the surrounding squares for the presence of a bomb by using the original M(10,11) array and seeing if any of the surrounding X-Y co-ordinate squares contain a 1, or in other words a bomb.

Line 1002 checks to see if you're on a square with a bomb at it. If you are it's off to line 1009 and a message that tells you you're dead, before showing the offending bomb's position on the grid.

If you that get to reach the corner of the grid, the routine starting at line 1008 informs you of your status, updates the level counter L, so that we can have mine-bombs, and then it sets all the bomb locations to 0, before going back to line 58 and coming up with some new bombs.

The main things to look at in the listing are the way that the grid is handled and the way that the surrounding squares are checked for the presence of a bomb. The use of the array M(10,11) to hold the bomb information and the use of the X and Y co-ordinates provides most of the reason for this short program.

Other things to see are generating random numbers (line 59), checking that the bomb is not placed on or for the starting square, one of the squares next to it (in which case you could never start the game), and the end square, all of which is done on line 58, and the handling of key pressing on line 64 to 66. You should also have a few games at the end of it!

This is a special Mac 26 adaptation of the original Minefield game for the Commodore 64 as published in *Young Joe's 64* (author: Pys Control, publisher: Gerald Duckworth) ■

```

50 IF P#="W" THEN GOTO 400:REM LEFT
55 IF P#="D" THEN GOTO 400:REM RIGHT
90 GOTO 60
600 IF J=6 THEN GOTO 60
605 J=J+44:POKE 7680+J,44:POKE 7680+J,102
610 Y=Y+1
615 GOTO 1500
616 GOTO 60
610 IF J=41 THEN GOTO 60
620 J=J+44:POKE 7680+J,44:POKE 7680+J,102
625 Y=Y+1
630 GOTO 1500
631 GOTO 60
640 IF INT (J/3)-1/221=J/3-10/22 THEN GOTO 60
645 J=J+25:POKE 7680+J,44:POKE 7680+J,102
650 X=X+1
655 GOTO 1500
660 GOTO 60
665 REM CHECK FOR BOMBS
670 IF X=2,Y=21=1 THEN GOTO 1000
675 X=X+1
680 IF X=2,Y=1=1 THEN GOTO 1000+80+1
685 IF X=1,Y=21=1 THEN GOTO 1000+80+1
690 IF Y=21 THEN GOTO 1510
695 IF X=1,Y=2=1 THEN GOTO 1000+80+1
700 X=X+1
705 IF X=1,Y=1=1 THEN GOTO 1000+80+1
710 IF X=1,Y=21=1 THEN GOTO 1000+80+1
715 IF Y=21 THEN GOTO 1510
720 IF X=1,Y=2=1 THEN GOTO 1000+80+1
725 X=X+1
730 IF X=1,Y=1=1 THEN GOTO 1000+80+1
735 IF Y=21 THEN GOTO 1510
740 IF X=1,Y=2=1 THEN GOTO 1000+80+1
745 PRINT "BOMB! YOU'RE BOMBED! I DO, MARY!"
750 X=X+1
755 RETURN
600 IF INT (J/3)-1/221=J/3-10/22 THEN GOTO 60
605 J=J+44:POKE 7680+J,44:POKE 7680+J,102
610 X=X+1
615 GOTO 1500
616 GOTO 60
610 IF P#="W" THEN GOTO 400
615 END
620 PRINT "CLEAR, WAIT AND COME TO MINEFIELD!"
625 PRINT "GO YOU HAVE TO FIND YOUR WAY ACROSS A MINE-"
630 PRINT "FIELD, TO REACH SAFETY IN THE TOP RIGHT!"
635 PRINT "CORNER OF THE SCREEN!"
640 PRINT "GO YOUR BEST! BOMB ONLY GOES ONCE!"
645 PRINT "ARE YOU SURE YOU'VE TAKEN CAREFULLY?"
650 PRINT "PLEASE A TO MOVE LEFT, S RIGHT, I UP"
655 PRINT "AND R DOWN"
660 PRINT "GO PRESS SPACE WHEN READY TO START"
665 GET M#; IF M#="" THEN PRINT "RETURN"
670 GOTO 3000
680 PRINT "CLEAR AND IMPROVED!"
690 PRINT "GO PRESS SPACE TO SEE THE BOMB!"
695 GET M#; IF M#="" THEN GOTO 3000
700 GOTO 3000
705 GOTO 1500
710 POKE 7680+J,102
715 POKE 7680+J,44:POKE 7680+J,102
720 NEXT J,A
725 PRINT "HOME MADE TO BE GAME IF DO DO"
730 GET M#; IF M#="Y" THEN GOTO 1500
735 GOTO "P" THEN PRINT "CLEAR!" THEN END
740 GOTO 3000
745 REM SURVIVED A LEVEL! GOTO NEXT ONE
750 PRINT "CLEAR YOU HAVE LUCKY ON LEVEL "AL
755 POKE 7680+J,44:POKE 7680+J,102:J=J+44:POKE 7680+J,44
760 PRINT "CLEAR! JUST PRESS SPACE AND I'LL PUT YOU"
765 PRINT "ON LEVEL "AL+1
770 GET M#; IF M#="" THEN PRINT "CLEAR!" GOTO 3000
775 GOTO 3000

```


Lee Allen's Bomber Fun
turns you and your craft
loose in the wild blue
yonder!

**GO
INTO
SPACE ON
YOUR 64**

(This is a revised version of a program previously published as *Popular Computing* #504 to 1.)

[illegible]

```

1  # Import the necessary libraries
2  import pandas as pd
3  import numpy as np
4  from sklearn.preprocessing import StandardScaler
5  from sklearn.model_selection import train_test_split
6  from sklearn.metrics import accuracy_score, confusion_matrix, classification_report
7  from sklearn.svm import SVC
8  from sklearn.ensemble import RandomForestClassifier
9  from sklearn.linear_model import LogisticRegression
10 from sklearn.metrics import roc_auc_score
11
12 # Load the dataset
13 data = pd.read_csv('data.csv')
14
15 # Check the shape of the dataset
16 print(data.shape)
17
18 # Display the first few rows of the dataset
19 print(data.head())
20
21 # Split the data into training and testing sets
22 X_train, X_test, y_train, y_test = train_test_split(data, data['target'],
23                                                    test_size=0.2,
24                                                    random_state=42)
25
26 # Standardize the features
27 scaler = StandardScaler()
28 X_train = scaler.fit_transform(X_train)
29 X_test = scaler.transform(X_test)
30
31 # Train the models
32 svm = SVC()
33 svm.fit(X_train, y_train)
34
35 rf = RandomForestClassifier()
36 rf.fit(X_train, y_train)
37
38 lr = LogisticRegression()
39 lr.fit(X_train, y_train)
40
41 # Evaluate the models
42 svm_pred = svm.predict(X_test)
43 rf_pred = rf.predict(X_test)
44 lr_pred = lr.predict(X_test)
45
46 # Calculate accuracy scores
47 svm_acc = accuracy_score(y_test, svm_pred)
48 rf_acc = accuracy_score(y_test, rf_pred)
49 lr_acc = accuracy_score(y_test, lr_pred)
50
51 # Print the accuracy scores
52 print('SVM Accuracy: ', svm_acc)
53 print('Random Forest Accuracy: ', rf_acc)
54 print('Logistic Regression Accuracy: ', lr_acc)
55
56 # Generate ROC curves
57 svm_roc_auc = roc_auc_score(y_test, svm.predict_proba(X_test)[:, 1])
58 rf_roc_auc = roc_auc_score(y_test, rf.predict_proba(X_test)[:, 1])
59 lr_roc_auc = roc_auc_score(y_test, lr.predict_proba(X_test)[:, 1])
60
61 # Print the ROC AUC scores
62 print('SVM ROC AUC: ', svm_roc_auc)
63 print('Random Forest ROC AUC: ', rf_roc_auc)
64 print('Logistic Regression ROC AUC: ', lr_roc_auc)
65
66 # Generate confusion matrices
67 svm_cm = confusion_matrix(y_test, svm_pred)
68 rf_cm = confusion_matrix(y_test, rf_pred)
69 lr_cm = confusion_matrix(y_test, lr_pred)
70
71 # Print the confusion matrices
72 print('SVM Confusion Matrix: \n', svm_cm)
73 print('Random Forest Confusion Matrix: \n', rf_cm)
74 print('Logistic Regression Confusion Matrix: \n', lr_cm)
75
76 # Generate classification reports
77 svm_report = classification_report(y_test, svm_pred)
78 rf_report = classification_report(y_test, rf_pred)
79 lr_report = classification_report(y_test, lr_pred)
80
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The department which has designs on you

Graham Cunningham talks to Gail Wellington — the lady leading Commodore's software charge

"SOFTWARE SELLS hardware" is a commonplace cry these days. But just six months ago Commodore president Jack Tramiel admitted: "In the past, our emphasis was on computer hardware." He put Sig Hansen in charge of developing software in the UK and added: "Today our philosophy has broadened." But the UK was already ahead of the States.

Twelve months earlier Gail Wellington had taken over as software products manager in Britain. At the time: "When I took over software was a small department, now there's 15 people here with more than 50 machines." And that department has designs on you.

In the run-up to Christmas Commodore is launching a range of packages covering games, business and education. Easy File, Fun Math and Assembly Tutor will be out for the 64, backed up by the second part of Introduction to Basic, which has already sold well in the US. Other business packages include Easy Stock and Future Fantasy. Games addicts can indulge in Fico Adels, Muggin' Bears and Mustang Monkeys, while Sci, Trap and Space Invaders among others, are headed the way of the stars.

None of this software is written in-house. As Gail says: "We'll look at anything anybody wants to send us." In fact Muggin' Bears arrived through the post from 16-year-old Jason Perkins. Commodore suggested a few improvements, Jason incorporated the remarks and the finished version is now on sale. Programs can arrive other ways. For example, Gail dist and assembler designer Paul Jay through the users' group ICPLUG. Fico Adels is a result of that meeting.

Assembly Tutor comes from Owen Mansour, an industrial training consultant, and Gail promises that this will be the one to ease the frustrations of Basic users perplexed by machine code. As she says:

"A lot more people are becoming interested in machine code, partly to write better games and partly to understand all there about the computer." Assembly Tutor aims to turn the machine code reference manual into a question and answer format.

Sometimes two heads can be better than one when it comes to programming — and

surely Commodore's software makers share two heads (and to be fair to father and daughter, Space Invaders was written by John Cohen, whose father is the man behind Intimatech's Basic, while Future Fantasy comes from Perseus, a father and son team in Northumbria).

Perseus supports a philosophy close to Commodore's heart. Gail looks for parents' aim of producing software for the masses — not for the classes. She explains that Perseus was "brought to death when we brought the cost of software down — because it would make it available to more people." Gail wants to produce software that will appeal to a broad range of users — it should all be easy and fun to use, most of all for the education or business markets. However, at one Jack Tramiel's ability to turn a good quote should instead, she adds: "Of course, we'll still produce specialist software for particular applications."

Driving force

Gail thinks that Commodore's president is "an amazing person." He is the driving force behind the firm with "concrete reasons for the market." She adds: "We set him at least every two or three months." But you hear him talk a lot more than Jack Tramiel practices a management policy of "look on us as his ear." If he thinks you're doing well, you'll get the praise — usually "if you're not doing what he expects, you'll hear about it."

And what the president expects is more software. "We intend to be a major force in the software business," he said earlier this year, and Gail is backing him all the way. She supports his aggressive approach, thinking that "it's not an unreasonable way to run a business", and adds some touches of her own. On her desk sits a card bearing the message in block message: "If this you don't succeed, you're fired."

What this approach means for Commodore users is that a batch of new languages and adventures arrives there every two Scott Adams adventures will be available on the Vic, and some sides will be introduced on the 64. Users of both machines will also have a chance to play The Jewel — a UK produced lunch-time



Gail Wellington: Commodore's UK software products manager

feature already in Commodore. If you've got a lot the choice will be even wider. Another UK game, Medusa's Lane, is on its way along with some celebrated American titles from Intimatech, including Suspended Doubt and the Zork trilogy. Strategy fans can look forward to a series of simulations starting with High Five (not Headline this time, but a big name business operator), Rail Run and Ocean Race — all for the 64.

As for languages, "the best implementation of Logo on any home computer" will be followed by a UK implementation of UCSD Pascal, Cascal, Forts, Prolog, Pict and a version of Cabel. As the list suggests Commodore has



Manager of Commodore's service of "as an England and then over there."

to are on the software market. Commodore "selling things that have educational value" and thinks that the speech module this early next year for the 64 is "ideal for primary schools." A version for Vic users will follow later in the year, while talking books and programs are also on their way.

Users of the 64 have more to look forward to — gaming discs on CP/M-based software. A 280 card allowing this will "probably be available before Christmas" like one is also needed to run the Global implementation. For 700 users the answer will be more under a CP/M to card has been finished and MMDOS is being tested now. Specialized software on real operating systems can then be used on

Commodore discs, although Gad adds that "most operating system software will still run from" it.

There are no plans for a limited precursor system on the Vic, and CP/M48 and MMDOS will not be implemented on the 64 because its CPU is fundamentally different to the 700's. However, 64 users will be getting Commodore's software answer to Apple's line. The price of Magic Desk has not been decided yet, but Gad says "it will be in the range of all our other software." And the more expensive package she sells for the 64 costs £15.

Like Lisa, Magic Desk provides features on the screen called menu identifying different items on the menu. So by selecting

the appropriate item you get menu processing, the telephone gives you answering, the filing cabinet gives you the cabinet, during you can game — and so on. As with most of Commodore's software the package is aimed at the "average computer" although Gad thinks small businesses would also find Magic Desk worth considering. The same have already been designed and the software is due in three "in advanced stages of development."

Obviously there have changed since software was only a background activity at Commodore. Gad is pleased with the results so far and "just casually played that the UK is contributing so much." Ironically though, the idea that declares "I'm proud to be a part of the UK's success" has an American sound — a fact that surprises a lot of people who like the more Commodore in the States. However, all but the account has been assimilated. She now thinks in terms of "as in England and then over there" and takes "great delight in going back to America and representing the UK software industry."

Gripe

So how do you get Gad to represent you?

The answer is to do as Jason Perkins did — send your tape or disk to Commodore in Stoughton. And don't worry about the quality of your coding, it's what your program achieves that's important. As Gad says: "We publish programs that would make teachers weep — if the graphics are good, the quality of the coding doesn't matter." Commodore is not more than 100 programs a month and accepts only about 1%. But every writer gets an evaluation sheet back with a detailed opinion of his submission. There's no need to send a program, but don't forget to send suggestions on how to use your program.

It is the successful 1% that are partly responsible for Commodore UK's software growth. The company operates worldwide (it wouldn't be to pay our international phone bill), and Commodore has the UK play an important role in software development. In fact this month the UK is playing host to an international meeting of Commodore software managers to plan next year's strategy. The message is that the UK is a vital test area software comes before a large.

Thus the UK will take much of the software developed in the UK, although there are differences in taste. Carttridges, particularly of "black-venom" games, are preferred in the States. Gad adds that their "major interest in games of strategy over here, but in home discipline, however, the place most about the difference in national psyche this suggests.

"Might 'turn-up' an evening, Commodore is at the software business for real now — how far will it go? Real more successful. Atari is already transporting its games to run on Commodore machines, many speculate that Commodore might do the same in reverse. There's always a chance we'll do nothing." Gad says, "but we've an immediate plan on this." And she adds: "My plate's full at the moment." ■

MR CHIP SOFTWARE

VIC 20

GAMES AND UTILITIES

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This is it, the ultimate Fruit Machine for the VIC with bonus, hold and repeat 100% machine code. "Overall Jackpot" is a beautifully written simulation giving superb graphics, animation and use of talent. In fact, this program makes Commodore's Fruit Machine cartridge look unbelievably cheap and easy! Home Computing Weekly No. 20 (6/7/81) — **£5.50**

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COMMODORE 64

GAMES AND UTILITIES

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Design your own business program

THE FIRST QUESTION you have to ask yourself is whether a computer system would be beneficial to your business. On completion of my accounts system, I contacted with the manual version for some months as a comparison. The first, most obvious fact to emerge was the saving in time. My normal five days a month was reduced by the computer to half a day, with a great deal more information than I had come to compile by the long hand method. I had often heard people say "the computer is writing itself" so I was extremely wary of my results, tending to doubt the computer's if they differed to my "superior" long hand methods. After being proved wrong on many occasions, I have now come to the conclusion that computers are far more suited to producing accurate accounts especially.

Your own system?

The second question you have to ask is whether the time spent on designing and writing your own system is justified. If you require a system specific to your needs then the answer is Yes, otherwise you may have to change your routine to suit a commercially produced package. There are other advantages in writing your own system, such as understanding the programs in operation and being at a point in time on any problem which may be encountered. If you feel you cannot spare the time required then you should consider employing someone to do it for you. There are numerous amateur programmers around who would be more than willing to put their knowledge to an applied task. Be prepared, however, to spend some time with your programmer as it is unlikely that you will receive sufficient information to finish the first time round.

What you'll need

Initially the purchase of a Commodore 64 and the Commodore cassette recorder for storing programs and information would be adequate for a large number of business applications and a printer and/or a disk drive would follow if required. Obviously serious programs, such as word processing, would need a printer or at least access to one and there are firms who will undertake to print your output. Therefore, bearing in mind those who will purchase a 64 and create accounts initially the programs listed here will produce the necessary information on the screen, but provision has been made for each program to be expanded to include printer and disk drive routines at a later date if required.

The introduction of a computer system is

PROGRAMMING

An extract from *Ann Hall's* *forthcoming book: Business* *Applications on the 64*

Before we discuss any program — consider that by entering into the computer such transactions, or a condensed coded version, once only, you will obtain a great deal of information at the end of the day, for example:

- Information to produce reviews and statements
- A breakdown of customers accounts
- Complete information on all transactions in date, identifying VAT for exchange and also taking into account sales of stock held, outstanding accounts and orders, and even your overheads
- Stock levels, updated in conjunction with customer accounts or direct sales and information on which orders should be introduced to bring the levels above a certain minimum
- Analysis of stock movement over a specified period, forwarding planning and leading to a business being run more efficiently and economically

In fact, any information you require is instantly available, being up to-date and in any format you could wish at the touch of a button.

A good impression

Consider the impression you would make on your bank manager if he rang one day, concerned about your overdraft and you were able to present him with an up to the minute financial state of your business, confirmed by a typed report, printed that same day.

There are many books on computing, but they tend to stick to the bare facts with little imagination as to applications in everyday business. With this in mind, my intention was to produce working programs in such a way that lack of programming experience is not a serious disadvantage. The programs listed can be used as they are, I have attempted to write them in as plain and logical a manner as possible. This means that some steps are more long-winded than others, but from my own experience, I feel it is essential to produce working programs first and then to wishing to transfer you from modifying the programs at a later date as your knowledge increases. It would be disadvantageous if I thought the work did not stimulate the reader into modifying the listings to suit his/her own

application — the only limitation is your own imagination.

Name data in some subroutines which will be of use in most business applications (BPS) indicates upper case space or shift key-space and it is important that this is adhered to. The blanks or spaces appearing in the program should be included using the space bar key only. Subroutine 1 deals with allocating arrays, setting up arrays, program security, disk drive channel, and checking for printer presence. The first five lines, although obviously not part of the subroutines replace the code used in the programs for control characters in place of graphic symbols. Graphic symbols can only be achieved by dot matrix or thermal printers and not typewriter printers. Note that number the square brackets are the code contained within should be included in a program, but the relevant control characters inserted instead.

Setting the colours

In line 2 the two normal poke commands and `chr$(144)` set the screen and border colours to two shades of grey with black letters which give maximum contrast on a black and white TV set. `chr$(144)` puts the computer into border scan mode (`chr$(142)` = upper case model and alternatives to drive are `poke10271,12` and `poke10272,11` respectively. It is worth noting at this point the number 128, in the difference between 14 and 143. This number added to or subtracted from character using codes will produce the opposite effect, so `chr$(270)` colour light and `chr$(127)` colour left, the difference being 128. The last poke 255 enables all the keys to repeat with no automatic procedure as a key.

In lines 3 to 6 the channel is set to avoid the security routine (lines 14-20) when returning from the program second time round. Close 13, along with open 13, 8, 13 in line 6, manages the disk error channel but should be contained in tape systems. The strings `u1` and `w2` in lines 4-5 will give a simple window/border effect when printed. This shows the top of the operator in a question and asks identification. The address of the program name is a constant reminder of the program running. By printing with the screen in channel of all information and is useful in programming.

Putting out savings

Lines 8-9 set up the variable `bcs` with 60 shift-spaces and are used for padding out strings. Line 10 allows space in memory for subprogram arrays, but the numbers can be altered to suit a particular program. Line 12 is needed if a variable is being used. ■

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¹ *Journal of Management Education*, 1990, 14(2), 139-147.



1. *What are the main findings of the study?*



1. **Identify the problem.** The first step is to identify the problem or issue that needs to be addressed. This involves understanding the context, the stakeholders involved, and the specific goals and objectives of the project.



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Journal of Internal Medicine 247: 101–107

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PL0Y YOUR SPACE CRAFT THROUGH THE SIX DEFENCE SECTORS AND DESTROY THE COMMAND MODULE OF THE
COMMON ENEMY: A 32 K ALL M/C BLOCKBUSTER



1. **Introduction**



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1. 2000年1月1日起，凡在我国境内销售货物的单位和个人，均应按销售额的一定比例缴纳增值税。



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FOR THE RECORD



EXPERIENCE ALL THE THRILLS
OF THE ADRIATIC COAST AS
YOU RELAX IN THE COMFORT
OF OUR CABIN OVER THE
SEA OF CROATIA



A 200 STAR TOUR GUIDE WITH
PHIL ARCADE AT 1100
 55TH ST. NEW YORK, N.Y.



ENTER THE REALM OF
FANTASY WITH SUMMER'S
OF SWEET CAPTAINS & REAL
MUSIC FOR THE CLASSICAL
MUSICIANS WITH CLASSICAL



**A POLICE SEARCH CLAMP
DOWNED TO LIFE WITH
MURDER AND ASSAULT CHARGES**

4 and press start key 26 times. On leaving the program, line 23 now reads "OK" only as other words the important code word (start) has disappeared.

Plugged in

Lines 21-22 make up a routine which basically, is asking whether a printer will be used in the program operation and if it is, will check whether the printer is plugged in or not. Various results are obtained and it is a matter of experimentation to establish the correct criteria to use. Factors affecting the routine are whether the printer is plugged directly into a computer or plugged into the back of the disk drive. In line 31 command "open 4" refers to open a channel or line 4 on device number 4. Device number 4 is the code which the computer recognizes as a "printer has to be accessed". So if status byte provides a record of the status of the system after a peripheral such as a tape recorder or printer has been accessed. If all systems are correct the variable 57 is returned as zero. The 118 is the code for DEVICE NOT PRESENT and although a return of this error number should be interpreted, it can happen that the running program will stop and will have to be re-started from scratch. There is obviously little point in running a program dealing with complicated data analysis only to have the program end because the printer has not been plugged in. For better to establish this point at the very beginning.

Line 9999 will end the program and close the disk error channel. CLOSE 15 will close

all other disk channels and should be entered in a tape system.

Subroutine 3 is a simple routine dealing with common questions which are frequently referred to and can store variable memory options and programming time. Lines 206-208 can be inserted either at line 206 or 202 depending on the type of question to be asked, eg the operator has been requested to enter a data file name and gosub206 ensures that the operator skips the entry before continuing. Gosub202 would be referred to for a simple YES or NO answer to a question such as DO YOU WISH TO PROCEED? gosub202. Line 205 will not accept keyboard entries unless they are either Y or N. Line 206 clears the screen, places the program name at the top and returns to the point after next.

Program pause

Lines 315-319 provide a halt in the running program to enable the operator to take a tape in the recorder or paper in the printer. Line 314 will only accept a SPACE BAR entry to continue. Numerous programs require PRESS ANY KEY to continue and this is not advisable. A collection of mine included this statement repeatedly in my program until one day, during a demonstration of a program to a captive audience the RUN/STOP key was pressed and caused him some embarrassment. It is, therefore, advisable to always specify a key entry. The space bar is ideal as that is it at the bottom of the keyboard, is large and easily found by the operator. This is an example of making a

program interactive with the Operator just as good screen display is important too.

Lines 321-324 deal with the automatic loading and running of a MENU program by ensuring whether this is intended and if the answer is NO the command RUN is ignored. Use of RUN in programs will probably be frowned upon by "master programmers" who will denote "memory programming technique". They are, of course, correct, but it's not as also very convenient as that of variables and arrays are cleared from memory and the program is restarted so if it had just been loaded. By specifying RUN, the variable of 1 is set to one and the code entry sequence is repeated.

Lines 325-328 deal with the mechanics of loading and running the menu program. CLR clears all variables from memory, the screen is cleared and last "menu" is printed on the screen followed by a fast line gap and run is printed once the screen. Note the sequence to print quotation marks on menu, in the use of chr(34). The position gap can be used instead of a sequence to allow the line to be printed to the screen in sequence.

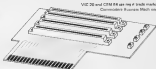
The effect created by the pause in line 325 is identical to typing load "menu" on the screen, pressing the RETURN key, followed by run and return key as in direct mode. It is possible to use the load command in the program mode, or RUN load "menu". However, programs can arise from this method if the program to be loaded is no longer than the original program. ■



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Moles

IN THIS GAME, your job is to drop bombs on enemies who dare to run down

You can drop up to 11 weights, but you have a strict limit of two categories in which to drop them. To drop them, use the FI function key.

There are three models, and the models are constantly on the move, so even if you drop the weight down the hole, you could still miss. If you let the model go, it will

When you run out of bottles, a show message appears, and the program resumes itself. If you run out of time, the timer beeps, and you restart.

1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 26

The variables are as follows:

M — Position of Robot

G — Apple

AP — Number of apples collected

LI — Number of apples having reached

base of screen

SC — Overall score

A — Character to be placed (either

robot

B — Colour to be placed (either robot

or Apple)

FR — First button value

```

10 GOSUB700
20 G=INT(1000+21*RHND(0)) PRINT"  " [FR]*LTHNDAP=10 [FL]*LTHNDAP=70
30 POKED=1702 POKEN=G POKEN+CO.7 JV=PEEK(56320) FR=JVND16 JV=15+(JVND15)
35 POKES4206.15 POKES4277.190 POKES4276.17 POKES4278.190
40 IF JV<LTHNDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
50 IF JV=44NDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
60 IF JV=50NDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
70 IF JV=50NDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
80 IF JV=50NDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
90 IF JV=50NDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
100 IF JV=50NDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
110 IF JV=50NDP=16 THEN R=R+1 IF PEEK(X)=50RPEEK(X)=LTHNDP=R+1
120 [PPEEK(X)+40]=32THNDP=POKEN.32 R=R+40 POKEN=G POKEN+CO.7 GOTO120
130 IF R=5THNDGOSUB200
135 IF R=16650R=1662THNDGOSUB400
140 [PPEEK(X)+40]=50P=5THNDP=50
145 POKES4275.0 NEXTJ
150 POKES.32 G=H+40 IF PEEK(X)=5THNDP=AP+1 POKES4273.40 R=32 POKEN.32 GOTO20
160 IF PEEK(X)=32THNDP=POKEN.32 POKEN+40.32 GOSUB100 GOTO20
170 [P=1940THNDL=L]+1 GOTO20
180 POKED.7 POKEN+CO.10 PRINT"  SC.  " "AP.  " " GOTO30
190 POKES4206.15 POKES4277.190 POKES4276.30 POKES4278.190 POKES4273.10 RETURN
200 R=PEEK(X) G=0 [FR]=2THNDP=RETURN
210 R=PEEK(X+CO) RETURN
240 IF PEEK(X+41)=50RPEEK(X+41)=LTHNDP=RETURN
245 POKEN=A POKEN+CO.8 R=R+41 GOSUB200 POKEN=G POKEN+CO.7
250 IF PEEK(X+39)=50RPEEK(X+39)=LTHNDP=RETURN
260 POKEN=A POKEN+CO.8 R=R+39 GOSUB200 POKEN=G POKEN+CO.7 RETURN
270 IF PEEK(X+39)=50RPEEK(X+39)=LTHNDP=RETURN
275 POKEN=A POKEN+CO.8 R=R+39 GOSUB200 POKEN=G POKEN+CO.7
280 IF PEEK(X+41)=50RPEEK(X+41)=LTHNDP=RETURN
290 POKEN=A POKEN+CO.8 R=R+41 GOSUB200 POKEN=G POKEN+CO.7 RETURN
300 [FR]=LTHNDP=RETURN
310 POKES3200.10 POKES=170AP AP=AP+1 SC=SC+1 NEXT POKES3200.11 RETURN
400 [FR]=165THNDP=165 POKES165.0 POKES165+CO.0
410 [FR]=165THNDP=165 POKES165.0 POKES165+CO.0
420 POKES4277.190 POKES4276.30 POKES4278.190
430 POKES=50NDP=50 POKES4273.2 NEXTJ
440 POKES4277.0 POKES4276.0 POKES4278.0
450 R=2 G=0 RETURN
470 PRINT"  POKES3200.0 POKES3201.0 POKES3270.21
480 PRINT"  *****  5 APPLES HAVE REACHED THE"
490 PRINT"  BOTTOM OF THE SCREEN"
495 POKES=1701000 NEXTJ
500 POKES4277.190 POKES4276.120 POKES4278.190 POKES4273.6
510 POKES=50NDP=50 POKES=17000 NEXTJ POKES4206.0 NEXTJ
520 POKES4277.0 POKES4276.0 POKES4278.0 POKES4273.0
530 PRINT"  POKES3200.0 POKES3201.0 POKES3270.21
540 PRINT"  *****  YOU WIN!! SC.  POKES"
550 PRINT"  *****  ANOTHER GOVND"
560 GOTO4
570 [FR]=LTHNDP=1700 GOTO20
580 [FR]=LTHNDP=1700 GOTO20
590 GOTO20
600 PRINT"  POKES3200.0 POKES3201.0 PRINT"  5  SCAPPLE FALLS"
610 PRINT"  *****  SAME OBJECT OF THE GAME IS TO PROTECT"
620 PRINT"  YOUR CLIENTS SCAPFOLDING FROM DAMAGE BY"
630 PRINT"  AN UNWISDOMLY YOUR AUTOMATED APPLE CATCHER"
640 PRINT"  IN A.B.C. AROUND THE STRUCTURE POSITIONING"
650 PRINT"  IT BENEATH THE FALLING APPLES DASHING"
660 PRINT"  IT TO COLLECT THEM"
670 PRINT"  *****  ONCE YOUR ROBOT HAS COLLECTED ITS"
680 PRINT"  10 APPLES CAPACITY (OR LESS) IT MUST"
690 PRINT"  STOP IT THEN IN THE COLLECTING BASKET AT"
700 PRINT"  THE TOP OF THE SCAPFOLDING ON EITHER"

```

Continued on page 47


```

1979 PRINT "  DD  3  3  0000000000  DD  DD  DD  3
1980 PRINT "  0000000000  0000000000  00000000  00000000
1990 PRINT "  0000000000  DD  DD  00000000  00000000
1999 PRINT "  DD  DD  DD  DD  DD  DD  DD  DD
2010 FOR I=1024 TO 1944 STEP 168: POKE I,0: POKE I+0.5, I
2020 FOR I=1944 TO 1980 STEP 168: POKE I,0: POKE I+0.5, I NEXT
2030 POKE I=1984 TO 2000: POKE I,0: POKE I+0.5, I NEXT
2040 GOTO 2040: IF=0: GOTO 1928: I+=8
2050 GOTO 2040

```

From Richard Barton at Zephyrus in June 1994: "I'm with Super Expediter. THIS PROGRAM generates music in four parts and full colour graphics on grids, notes, transits, etc. The shape of a note is

```

10 REN L10HT & SQUAD
12 REN R18PFTOL,1983
14 GRPPICT2
20 S1=36874 S2=36875 S3=36876
54=36877 1=36878
30 POKEV,5
50 FORKP=1TOR
60 CO=INT(RND(1)*415)
70 COLORDC/2->CO,0
80 F=INT(RND(1)*127)+50
90 G=INT(RND(1)*127)+125
100 C=INT(RND(1)*127)+125
110 D=INT(RND(1)*127)+125
120 TD=INT(RND(1)*9999)+1
130 E=INT(RND(1)*10200)
140 F=INT(RND(1)*10200)
150 G=INT(RND(1)*10200)
160 H=INT(RND(1)*10200)
170 POKE32,H
180 DRAG2,E,PTOG,HTO500,1023TOR,F
190 FORT=1TOR/5) NEXTT
200 POKES2,B
210 POKES1,C
220 FORT=1TOR/5) NEXTT
230 IFTR30THENPOKES4,D
240 IFD<14THEN CIRCLE2,E,F,0,H
250 IFD<20THENH=H+300
260 IFRC130THENH=H+370
270 IFTR30THENH=H+10
280 IFTR10THENH=H+450
290 FORT=1TOR/5) NEXTT
300 POKES4,G) NEXTTP
310 SQAQR
320 GOTOTO30
330 FOROR=1TOR1023STEP50
340 DRAG2,G,OTOC,1023) OR
350 NEXTOR
360 RETURN
370 FORSR=1TOR1023STEP50
380 DRAG2,GR,OTOC,1023)
390 NEXTOR
400 RETURN
410 FORGR=1TOR500STEP50
420 CIRCLEVER1,500,500,GR,CR
430 NEXTOR
440 POKES1,G) POKES2,G) POKES3,G) POKES4,G)
450 RETURN
460 RO=INT(RND(1)*1000)
470 IFRC350THEN FORGR=ROTOR500STEP20
480 IFRC350THEN FORGR=ROTOR500STEP-20
490 DRAGOVER2,500,500TOR,G)
500 NEXTOR
510 RETURN

```

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First steps on the road to robot building

The first few stages in constructing turtles and micromice may be inexpensive but not without the occasional stumbling block, as Dr John Billingsley explains

STEPPER MOTORS are a favourite actuator for the cheap motor expert. Their drives involve only logic signals with no need for digital-to-analogue conversion. Until recently only premium "upper-class" motors were available in an outrageous price. But with the microcomputer and a requirement for low-cost peripherals there has come a demand for cheap stepper motors which the industry has been quick to fulfil. A suitable motor for turtles and micromice is the Vitage 1242, distributed by Impres of Richmond at around £12.00.

Despite their apparent advantages, stepper motors are not without their problems. They have a firm resistance to their top speed, and the useful torque falls off dramatically as this is approached. Sudden speed changes even at relatively low speeds, can stall the motor. Unfortunately, unless special sensors are added, the computer is unaware that the motor has stopped "out of cog". All subsequent movements therefore take place with a position error, and as most micromice are made. A useful drawback is a battery-driven system is powered down when the microcomputer is stopped down to such power as under full load.

Down to work

Just how does a stepper motor work? The title is a permanent magnet, while the stator (the fixed part) has a number of electrical windings which when energised create a magnetic field. The field pulls the rotor into line, and by changing the sequence of energised windings a suitable sequence, the rotor is pulled round step by step. When the stepping stops, the rotor is held in position by the magnetic field.

The movement of the permanent magnet rotor can be likened to the rotation of a magnetic compass — indeed you can use a compass as an experiment to demonstrate how a stepper motor operates. Obtain a cheap compass — the simple sort with a pointer rather than an arrow and will be best. Wind a coil of 30 turns of fine enameled copper wire — 34 awg or finer — around the compass — obviously the wire must not obscure the view of the needle. Connect a 12 volt resistor in series with the coil, and apply to across the ends. You will

find experimenting much easier if you connect the user part to a "double-block" terminal strip, as shown in Figure 2. You can now lead 5v and ground on the connector strip.

When the voltage is applied, the needle should rotate and line up almost perpendicular to the coil, at along the axis of the coil. Reverse the applied voltage and the needle will rotate. Could the coil, and hence the needle, be driven directly from two bits of the user port? Unfortunately the current available from PICAT is limited to about three millamps, and unless you are prepared to risk the risk of several hundred turns this will not overcome the effect on the needle of the earth's magnetic field. We must therefore use some amplifiers — no bad thing in preparing to drive precise stepper motors. The simplest amplifier consists of just one transistor and one transistor per bit of output — four of one per motor. (Later on we can consider using a Darlington driver chip instead.) A good

general purpose PNP transistor is a 2N 1700 (18A 2N 1704), costing well under £1.00 per each of five.

First connect just one transistor to your coil, driving it from PICAT via a 1 kOhm resistor as shown in Figure 3. Connect the emitter and pin to ground. Nothing should happen to the compass at first. Set the output data register to all bits high by typing POKE 56777,159. Then configure bits 0-3 as outputs by typing POKE 56778,15. Still nothing should happen because the output of PICAT is high, and does not yet sink any current via the transistor base. Now type POKE 56777,150. This will sink PICAT to zero and current will flow into PICAT from 5v through the transistor base and 51. The transistor will be turned on, applying 5v from the transistor collector to the coil and rotate. The needle should line up at 90° from the current off again with POKE 56777,255 before the motor 51 starts rotating.

To reverse the needle, we must be able to pass current in the opposite direction. With a circuit as simple as this one, we cannot reverse the current in the wire, and so we need a second coil, wound directly over the top of the first. Wind a further 30 turns of wire, connecting one end to the resistor, and winding on a direction such that the two joined wires become the half way point of the coil which now has 60 turns. Connect a coin of the transistor circuit, and drive it from PICAT, as in Figure 4.

More

Now the commands POKE 56777,150-2 followed by POKE 56777,255 should drive the compass needle first one way (north west) and then the other (south). Another command POKE 56777,251, will switch off both arms of the coil, and the compass will be left to the mercy of the earth's field.

To fit everything about with a compass does not seem to have much to do with motors but now the plan gets more exciting. Wind another iron coil, also of 30-60 turns, over and perpendicular to the first and. Now when the new coil is connected via two more transistors and driven from PICAT to PICAT, the command POKE 56777,255-4 will cause the needle to point in the new direction. If the first just moved the needle to point north or south, then the second coil causes the needle to point east or west. By switching on one of the 64 coils and one of the 64 coils together we can also obtain NE, SE, SW and NW (see Figure 5).

Speed and microcomputer control

Enter and run the following program

```

1000  REM *****
1010  REM *****
1020  REM *****
1030  REM *****
1040  REM *****
1050  REM *****
1060  REM *****
1070  REM *****
1080  REM *****
1090  REM *****
1100  REM *****
1110  REM *****
1120  REM *****
1130  REM *****
1140  REM *****
1150  REM *****
1160  REM *****
1170  REM *****
1180  REM *****
1190  REM *****
1200  REM *****
1210  REM *****
1220  REM *****
1230  REM *****
1240  REM *****
1250  REM *****
1260  REM *****
1270  REM *****
1280  REM *****
1290  REM *****
1300  REM *****
1310  REM *****
1320  REM *****
1330  REM *****
1340  REM *****
1350  REM *****
1360  REM *****
1370  REM *****
1380  REM *****
1390  REM *****
1400  REM *****
1410  REM *****
1420  REM *****
1430  REM *****
1440  REM *****
1450  REM *****
1460  REM *****
1470  REM *****
1480  REM *****
1490  REM *****
1500  REM *****
1510  REM *****
1520  REM *****
1530  REM *****
1540  REM *****
1550  REM *****
1560  REM *****
1570  REM *****
1580  REM *****
1590  REM *****
1600  REM *****
1610  REM *****
1620  REM *****
1630  REM *****
1640  REM *****
1650  REM *****
1660  REM *****
1670  REM *****
1680  REM *****
1690  REM *****
1700  REM *****
1710  REM *****
1720  REM *****
1730  REM *****
1740  REM *****
1750  REM *****
1760  REM *****
1770  REM *****
1780  REM *****
1790  REM *****
1800  REM *****
1810  REM *****
1820  REM *****
1830  REM *****
1840  REM *****
1850  REM *****
1860  REM *****
1870  REM *****
1880  REM *****
1890  REM *****
1900  REM *****
1910  REM *****
1920  REM *****
1930  REM *****
1940  REM *****
1950  REM *****
1960  REM *****
1970  REM *****
1980  REM *****
1990  REM *****
2000  REM *****
2010  REM *****
2020  REM *****
2030  REM *****
2040  REM *****
2050  REM *****
2060  REM *****
2070  REM *****
2080  REM *****
2090  REM *****
2100  REM *****
2110  REM *****
2120  REM *****
2130  REM *****
2140  REM *****
2150  REM *****
2160  REM *****
2170  REM *****
2180  REM *****
2190  REM *****
2200  REM *****
2210  REM *****
2220  REM *****
2230  REM *****
2240  REM *****
2250  REM *****
2260  REM *****
2270  REM *****
2280  REM *****
2290  REM *****
2300  REM *****
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The compass needle should now rotate, at whatever jittery rate as a stepper motor.

Now you can try a variety of numbers in line 280 to see the speed of the motor. You will find that if you set too high, the



Completed coil and coil



Close point to microcomputer strip

Ultrabasic-64

Delivers everything you need to get into the world of COMMODORE 64 using one of the following:

- High resolution graphics
- Mathematical graphics
- Bar charts
- Sound effects
- Joystick, game controller, lightpen
- Hard copy of graphics screen for Commodore or laser printer

What if you want a software package which is able to help you use these features? Then you must use **ULTRABASIC 64**. It has all the features of BASIC 64, plus the Commodore 64 commands for graphics and sound and joystick and game. The program can even translate your screen into a resolution that is not 640x400. **ULTRABASIC 64** includes many of the tough edges of using the 64 in BASIC.

It also has enough software to help you **ULTRABASIC** commands which let you make an 80 line monitor screen. Just download from our great website and let them go. Also copy disk 100.
 £22.95 (includes £24.95 disk)

Super Disk Utility-64

SUPER DISK UTILITY 64 is just the Commodore 64 with several useful functions to make working with the 7541 disk drive easy. Features include:

- Copy disks to or from other disks & floppy disk
- Format disks without erasing a disk itself
- Disk copy and disk utility. Available by disk
- Backup/restore file directory

Has an easy to use menu driven, graphical mode to control programs only. It is a powerful tool for the 64. The program works by copying a disk from the 64 to the Commodore 64 and then copying the results to the new disk. This process is simple as many users do not realize that the program is available for all 7541 & 7540 disks.

Has many useful features for the Commodore 64 and 7541 20 computer including format, utility and disk. (Format disk utility is available for the 7541 disk or the 7540 disk and the 7541 & 7540 disk can be formatted).

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Please cut out and send this form to: Classified Department, Commodore Horizons, 12-13 Little Newport Street, London WC2N 2PL.



Figure 1: Motor



Figure 2: Motor

4. Motor will not start. The accelerating decelerating by making the following changes:

1. Increase the delay time.
2. Increase the delay time.
3. Increase the delay time.
4. Increase the delay time.

How the delay will reduce progressively until the top speed is reached. The current value is low 128. The speed will climb very slowly, nothing at the end. A much faster speed-up can be obtained with:

255 V = V² / R

You are now experimenting with stepper motors which you will need when you produce to a general stepper motor. Of course the program is not generally designed, and is not really variable. Nevertheless the computer motor will already have taught you some of the pitfalls to look for:

1. Without drive, the motor does not rotate in position.
2. Looking to a new program takes the form of a poorly damped oscillator. As various stepping modes there is a necessity so that the new program build up — the motor then fails.
3. Movement at low speeds is "bumpy". This can be improved somewhat by doubling up on the applied steps so that the sequence is N, N+1, N+2, N+3, N+4, N+5 and back to N.
4. Sudden changes of speed will stall the motor.
5. There is no absolute position reference — everything depends on the motor keeping its step.

Now let us try to introduce some logic into the software, so that it will be of more general use. The codes which demonstrate the coil patterns are best held in an array. I have a personal preference for putting all substance data at the end of the program, so that it does not obscure things of the functional part. Thus the program will start with `CODE 00000` and all definitions will start at line 00000.

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Figure 1

COMMODORE 64
VIC 20
BBC
ACORN ETC

LOOKING FOR SPARE TIME EARNINGS?

If you are interested in becoming a Dytewell agent in time for the predicted boom in sales this Xmas then write or telephone now.

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BARRY, S. GLAMORGAN, CF6 7EW
Telephone (0446) 742491**

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CLWYD PERSONAL COMPUTERS

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[illegible]

ANSWER BACK

Looking for a good book

COULD YOU please tell me whether it is possible to obtain a book about high resolution graphics on the unexpanded or expanded (16K) Vic 20.

Also could you tell me if there is a book about machine code available and, if so, from where.

A Commodore

Technical Support Team:
AS YOU probably know there is a great range of books available covering most aspects of the Vic 20. Many of these, however, are hardly worth looking at, especially most of the games books.

For a start on programming in high resolution graphics it is probably best to try and work your way through the Commodore Vic 20 *Programmer's Reference Manual*.

When it comes to machine code programming the best book is probably Dr Watson's *Assembly Assembly Language Programming on the Vic 20*.

Colling Micronet

I WOULD like to know when and if there will be a modern replacement to allow the Vic 20 to access the Micronet 800 service.

I understood that BBC and ZX Spectrum users have had modernised, but have-based nothing about a Vic 20 modem. Is the Vic 20 screen display impossible to change to a Pseudo compatible display? Will there only be a modem for the CBM64?

Please help

Andrew Lewis

Compton

Dorset

AT THE moment there are only plans to introduce a CBM 64 version for Micronet 800. This looking seems to be that the Vic 20 is not going to be around much longer, at least not long enough to make a worth investing in the design and manufacture of a modern connection.

Old chestnuts roasted

WHERE'S THE expansion port on the Commodore 64?

UNLIKE the Vic 20, the Commodore 64 has a slot of RAM that cannot be increased. There is therefore no expansion port.

ARE THERE any different sizes of Commodore 64 on the market (there are two distinct colours and various nomenclatures)?

YES, THERE are two sorts of Commodore 64, NTSC and PAL. The NTSC is the American version and the PAL the English version. The PAL version is the only one available in this country.

WHERE DO you connect the printer when the disk drive is being used?

THE PRINTER is connected directly into the serial port on the back of the disk drive and.

WHEN TYPING in a program, why is it not possible to get reverse characters (i.e. from 'CONTROL/SPACE' to 'Y'?)

THE LETTERS 'A'-'Z' will only appear in reverse when the program is run. THE POKE location is in the centre of the screen when addressed should there a white ball (see next question), why doesn't it?

THE COLOR memory needs to be POKE'd with a colour different to that of the background colour before the ball becomes visible.

CAN YOU use a pre-recorded software for the 8000 series on the Commodore 64?

YOU CAN, but only if the programs don't refer to the series and there are no machine code routines.

CAN YOU run Vic 20 software on the Commodore 64?

VIC 20 software is not compatible with the Commodore 64. (In some circumstances if the program is an ordinary Basic and does not use POKE statements it will run.)

THE TANK > UFO program in the rear of the Vic 20 user manual has a line 135 with 80 characters, why?

THE MAXIMUM allowed on one line is 4 x 32 = 128 characters, therefore you must abbreviate this line. This is made possible by either starting all spaces in by using the character code of the Basic key words, or prefixed B) for the PRINT statement.

Do you, however, be too disappointed. Although Micronet is an admirable idea, and has many applications for a business user, it does have many disadvantages for the home user.

It is relatively expensive to allow the machine to become a subscriber to the service and to pay all the phone bills which go with regular access to the information. There is not as yet a great deal of useful material on the service and it is frustratingly slow to download any software. We also feel that many home users are not happy having their telephone barred from ordinary calls while they are using the system.

It is probably better to resist yourself to having to must add a laser cable connecting system can be used. This is likely, however, to be several years away.

Have you tried to find a commercial routine/program to make a 3.5K program to be run on a 16K addition.

This is particularly frustrating as I am not able to expand additional programs above the memory available. I am new to home computers but experts have advised me that all the problems referred to can be overcome. Could you please advise me?

J. Walling

Quarry Road

West Midlands

I AM sure you do not need us to tell you that the main advantage of the 64 memory expansion is that you can run far longer and, hopefully, better programs. You will not, for example, find many adventure programs which will fit under 128K.

Programs written in Basic above do not need to be adapted to run on the expanded memory. Although the Basic program needs to be relocated the system will handle it automatically.

As you rightly imply, problems only arise when you have 128K programs which POKE to the screen or colour area. To make these programs run try typing in the following POKEs before

loading the program. I have not tried this routine, but it comes from a good source — an article by Mike Todd on page 20 of the Spring 79 Vic 20 magazine.

```
POKE 440,0 <-Screen>
POKE 442,16 <-Screen>
POKE 443,0 <-Screen>
POKE 444,96 <-Screen>
POKE 446,16 <-Screen>
GOTO 44074 <-Screen>
```

More than the Basics

I HOPE to buy a computer to include a Commodore 64. One thing I would like to know, is what is the best way?

Paul Foxworth

Perth

Wales

MAC HOME only is a worthwhile and a lot of its members which are converted into home by the computer.

If you need help with a technical query or problem write to:
Answer Back
Commodore Magazine
12-13 Little Newport
Street London
WC2R 2ND

Much more on memory

I HAVE yet to discover the full advantages of the 16K Basic pack for the Vic 20.

Other than the knowledge that the microcode releases the Basic, screen and colour.

IT WAS a poor night in the Ball Room Maze Club, Only Alpacas, Barons, Cyns, Doyals and Ementals had turned up. They made the usual staccato setting up their equipment.

The stage room, Commodore Hall, was in fact, a village of Ben Looz hat, with small tables arranged down one wall, a row of lockers on the wall at the end and various chairs, boxes, ropes and so on scattered all around.

The only really bright spots in the room were the rows of stage equipment, the various tables in the piano supply. Each was a different color, making the color of the light running to each music. Five different colors were each growing with the graphics of their respective owners' favorite game (all a flavor of course). Except, that is, the 30 inch color TV, which seemed to have become detached, as did the joystick in the defense on the floor.

When the five connected their wires up, each machine

COMPETITION CORNER

Win a CBM disk drive

Commodore provides the prize, Tony Roberts the puzzle



was complete, each with its single peripheral (the joystick and a light pen, a video box, some disk drives, and a printer). Can you find where the disconnected line belongs? Here's some information that may help. The red lead

runs to the Pen, the green plug powers the lightpen, Printer is running up the machine connected to the yellow cable, and the Spectrum is on the table next to the maze on the blue lead.

There's a 35 inch screen

Send your answers to Competition Corner, Commodore Electronics, 12-13 Little Newport Street, London WC2N 6LP — to arrive no later than the last working day in this month on the cover of this issue. The names of the winner, and the solution to the puzzle, will be published in the issue after next. Entries will not be acknowledged and no contact will be made with competitors on the result.

MARKET VIEW

Shake, rattle, and roll . . .

WHATSOEVER happened to the money-spinning computer industry that was never going to look back? In recent weeks, the industry's relationship with investors has come under increasing strain, but Commodore's banks it can stay ahead.

On the home computer front, there is no more, while Newbridge makes Grandly Business Systems, founded by sales of nearly £1 million, search for a sponsor. The news at the Newbridge and of the market is no better. Alan, Total Instruments, Matel, Vector Technology and Futurim Systems have all failed to measure losses this year.

In the UK, ACT (replaced the Agfa) is at the PCW show to a feature of impossible events and advanced orders. ACT itself originally fell £10 in two days.

Acorn barely attracted enough support to floor 10% of the company's share on

the stock exchange's United Securities Market to the minimum asking price. This stockbroker's market could even say of the company which has a completely respectable pedigree: "Fundamentally, Acorn is a disaster. There's a very real chance they will be burnt in two years."

What lessons can be learnt from this disaster at the industry? First, after a spell when small firms seemed to be doing well, Acorn sales last year were £42 million against 1979's £11,000 — a loss at the moment as if by a factor of 10. In 1981, after losing market share to rivals, is starting to recover. competitors like Honeywell and Amstel, carrying all before it with the cheaper PC and working releases through Apple's share price just with the direct of the Premier.

If loss is to be a guarantee of survival — although remember that Alan and Matel turned huge profits into losses of hundreds of millions of dollars — then Commodore looks up to stop the reverse. Commodore itself believes: "Eventually the number of computer producers will be reduced to a handful of companies" — and back to survival with

sales of £100 million devoted to computer services.

Commodore and most like that enable Commodore to price ahead with plans to mass production at its Carby plant to three million units a year.

The second moral from these troubled times is that grabbing a bigger slice of the market means accepting even starker profit margins, and/or pricing with ruthlessly. Many companies over-produced and couldn't sell them to keep up with new, more capable products. They ended up with piles of stock back at their warehouses, selling half-price or junk-price.

Here again, Commodore looks well placed. In spite of the current difficulties facing the small computer market, a strong case that Commodore's demand is still there. Steve Gooding, New York marketing consultant to Commodore, reckons that two million home computers were sold in 1981. The 1982 figure will be over five million and Commodore expects to take 40%. Gooding puts the world market at 50 million units by 1987.

Commodore chairman Jack Tramm hopes to keep

connected to the No. 20, King Kong in the game running fast to the top flat-screen screen and proper data in the main unit over 14 inch television.

The cassette drive is connected to the Commodore 64, and the voice box is on the middle machine.

The wonder game is not showing up too well on the monitor, but the Hobbit, which is running on the line, looks clear enough. The adventure game is huge, though, and needs disk drive of its own.

The left most machine is the Spectrum and the mouse powered by the green plug into the right of this is the video unit.

All the machines, peripherals, leads, plugs and TVs are in the same order. They might be in a maze, but not that much of a maze.

As a headliner, complete the following sentence in less than 15 words: I want to tell Commodore disk drives in my dream because . . .

Commodore is now in following two principles: "We believe in high volume products and we put our own savings on — the second the best." This philosophy has made deep pockets into Commodore profits at all levels of the computer market. At the lower end, the No 20 now costs £140 against last year's £194 while the price of the Commodore 64 has dropped from £200 to £120.

Dealers big and small — operating on 35% average discounts — are willing to sell the 64 below £200 and US buyers pay a mere £110. In others, most is still to come.

But cutting margins to bare minimum may still provide for the family established Commodore — even Tramm must accept that in an industry where competitors are paying their own as much as each other's losses, there are no winners.

Christmas in the UK will be crucial — Commodore hopes to sell 400,000 computers by Christmas backed by a hefty £10 million advertising budget. If cash flow fails, it looks like home a happy Christmas for consumers, but how many computer firms will enjoy a prosperous New Year?



NOW

P.S.S. INTRODUCE THE FIRST OF MANY FOR THE COMMODORE 64

To launch our new range of Software we have selected the finest arcade action and adventure from the U.S.A. Canada and the U.K.



METRO BLITZ



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For the computer programming novice, a well-paced tutorial in the basic language, command structure, control flow, file management, graphics and disk structure, in a compact reference. Program examples with full, by-line explanations, multiple choice questions, "homework" assignments.

£7-95



'COSMIC SPUIT

You are caught in a virtual world of giant insects. Characters are attacking you from all sides. Kill them as they creep from the sky, and to top things off there's a massive spider looking at the back ground.

£7-95

METRO BLITZ

The object of this game is to defeat your city against an onslaught of robotic aliens. Six different types of aliens threaten the city with out stops, having no respect for those you love.

£7-95

NEOCLYPS

You are the GOOD GUY, American Eagle and licensed car pilot. The BAD GUYS, as they call them, drive color modes have created 80000 VPS, one of your kind and others, being the point you that you are sent off to liberate the Communist Party of Neoclyps from the oppression of the Bad Guys. The Bad Guys have created Neoclyps with several rules, which make your position to them.

£7-95



CRYSTALS OF ZOND

These objects is to destroy the crystals and recover the treasure which are waiting you as you progress to your quest for the Kingdom of Zond. Quick movement will be necessary if you are to control them and guide you.

£7-95



MOBBY DICK

The object of this game is to show an extraordinary ability the little white and black the fishing plot. You should kill the whale.

£7-95

PSS